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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/751,303

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74576

7590

01/05/2010

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EXAMINER

SELLMAN, CACHET I

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/751,303	Applicant(s) BLOHOWIAK ET AL.	
	Examiner CACHET I. SELLMAN	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-34,37-40,42 and 72-74 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-34,37-40,42 and 72-74 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/12/2009 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 25-34, 37-40, 42, and 72-74 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 72 states "wherein the hydrolyzed surfaces improve chemical bonding to the sol gel coating," this limitation fails to state to what surface is the improved whether it's the metal foil surface or to the oxyhydroxide layer. Also the claim fails to state the point of reference for the improvement of the chemical bond, the chemical bonding is improved over a metal surface without the oxyhydroxide layer?

4. The term "elevated" in claim 27 is a relative term which renders the claim indefinite. The term "elevated" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the

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art would not be reasonably apprised of the scope of the invention. Claim 27 requires applying a caustic solution at an "elevated" temperature to cause hydrolyzing. However, "elevated" is not further limited in the claim, and in the specification the applicant gives a range of temperatures at which the caustic is used 150-220F but does not define or limit this range as being an "elevated" temperature.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 25-27, 29-31 and 72-74 are rejected under 35 U.S.C. 102(b) as being anticipated by Blohowiak et al. (US 5869141).

As to claim 72, Blohowiak et al. discloses a process of grit blasting a metal material with fine particles of aluminum oxide (see col. 10, lines 42-58); and applying a sol gel to the surface (see co. 3, lines 3-10). Blohowiak et al. fails to explicitly state forming oxyhydroxide layers onto the metal surface as required by claim 72. However, Blohowiak et al. discloses subjecting the metal material to a caustic solution of sodium hydroxide that has a concentration of about 20% by weight of sodium hydroxide (see col. 18, lines 1-4) at a temperature of 190F (see Table 6, col. 20 line 47). The applicant discloses that the oxyhydroxide layers are formed by using a 10-50% by weight sodium hydroxide at a temperature of 150-220F with 190F being preferred (see page 4 second paragraph). Since Blohowiak et al. discloses the same concentration of sodium

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hydroxide and temperature as that of the applicant's, the caustic etch process of Blohowiak et al. would result in the formation of oxyhydroxide layers being formed on the metal surface.

As to claim 25, the metal of the foil can be titanium, aluminum (see abstract) or copper and stainless steel (see col. 16, lines 55-59).

As to claim 26, Blohowiak et al. discloses a grit of 180 (see col. 10, lines 42-58).

As to claim 27, Blohowiak et al. discloses exposing the metal surface to caustic at 190F which is the same temperature as applicant therefore would be an "elevated" temperature.

As to claims 29-30, the temperature used is 190F.

As to claim 31, Blohowiak et al. teaches the sol-gel layer is about 10-500 nm thick (see col. 4, lines 42-45).

As to claim 73, an adhesive coating is applied to the sol gel coating (see abstract and Fig. 1).

As to claim 74, the process is continuous as illustrated in Fig. 1.

Claim Rejections - 35 USC § 103

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 28 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blohowiak et al. (US 5869141).

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As to claim 28, Blohowiak et al. does not teach that the NaOH concentration in the caustic solution is 25%. However, Blohowiak et al. teaches that the alkaline etch with TURCO 5578 produces roughened surface better suited for adhesive bonding. The concentration of the alkaline solution will affect the roughening of the surface making it a result effective variable. Therefore it would have been obvious to one having ordinary skill in the art to modify the process to include the concentration within the claimed range through routine experimentation in order to optimize the roughening of the metal surface to improve the adhesion of the coating.

As to claim 32, Blohowiak et al. fails to teach explicitly using 100nm layer of sol-gel. However, Blohowiak et al. teaches that if the sol-gel coating becomes too thick the film becomes too glassy (see col. 4, lines 49-55). Therefore the thickness is a result effective variable and it would have been obvious to one having ordinary skill in the art to use the thickness as claimed through routine experimentation in order to achieve the desired appearance of the film especially absent in criticality in using the claimed thickness.

As to claims 33 and 34, Blohowiak et al. teaches that the sol-gel is a mixture of zirconium alkoxide, 3- glycidoxy-propyltrimethoxysilane, and glacial acetic acid (column 3, lines 3-10). Blohowiak et al. also teaches that the sol-gel is a mixture of zirconium n-propoxide, 3-glycidoxy-propyltrimethoxysilane, and glacial acetic acid (column 4, lines 28-35). Blohowiak et al. does not teach that the mixture must have a surfactant. However, Blohowiak et al. does state that the mixture can have surfactants or thixotropic agents in the solution to improve spray characteristics. The surfactants or

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thixotropic agents help to provide a more uniform sprayed coating and improve the manufacturability of the process.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a surfactant in the mixtures. One would have been motivated to do so because Blohowiak et al. teaches using surfactants improves the spray characteristics of the solution; provides a more uniform spray coating; and improves the manufacturability of the process therefore one would have a reasonable expectation of success of applying the sol gel using a surfactant in the composition.

9. Claims 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blohowiak et al. as applied above in view of Montano et al.

The teachings of Blohowiak et al. as applied to claim 72 are as stated above. Blohowiak et al. fails to teach applying the adhesive coating in a dip-coating tank or by spraying as required by claims 37-38.

Montano et al. teaches a method for treating adhesion promoted metal surfaces with an epoxy resin. Montano et al. discloses a process of roughening a metal surface, applying an adhesion promotion composition to the metal surface then coating it with an epoxy resin composition (abstract). Montano et al. also teaches that the epoxy resin composition is can be applied by spray coating, dip coating, roller coating, or any suitable method to apply an epoxy resin (column 9, lines 41-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Blohowiak as modified above to apply the adhesive using the methods of Montano et al. One would have been motivated to do so

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because both discloses processes where a metal is coated with an adhesion promotion composition then coating with an epoxy resin and Montano et al. further discloses alternative methods of applying the resin therefore one would have a reasonable expectation of success in applying the adhesive coating to the metal.

10. Claims 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blohowiak et al. as applied above in view of Tola (US 5049232).

The teachings of Blohowiak et al. 73 are as stated above. Blohowiak et al. does not teach applying the adhesive to a thickness of 0.1 – 3.0 mils or 0.75 as required by **claims 39-40**.

Tola discloses a method for forming a foil/dielectric laminate by applying an epoxy resin to the foil, baking the adhesive in an oven to remove the solvent in the adhesive, which dries the adhesive and reduces the thickness of the layer to about 0.4 mils. The thickness is a result effective variable, which depends on the curing conditions. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the thickness within the claimed range through routine experimentation in order to ensure that the foil is laminated to the dielectric especially since there is no evidence in using the thickness in the claimed range.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Blohowiak et al. to include applying the adhesive at the thickness as taught by Tola. One would have been motivated to do so

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because both disclose applying an epoxy to a foil for form a laminate and Tola teaches a process where a laminate is formed using an epoxy applied to a foil therefore one would have a reasonable expectation of success in forming the laminate.

11. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blohowiak as applied to claim 73 above in view of Poutasse et al. (US 5629098).

The teachings of Blohowiak et al. as applied to claim 73 are as stated above.

Blohowiak et al. does not teach that the solvent is acetone as required by **claim 42.**

Poutasse et al. discloses applying an epoxy adhesive to foil to produce a laminate. Poutasse et al. teaches that the adhesive contains a solvent where the solvent can be acetone (column 4, lines 55-59).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the process of Blohowiak et al. to use the adhesive of Poutasse et al. One would have been motivated to do because both disclose processes for applying an epoxy adhesive to a foil to make a laminate where the foil is roughened before the adhesive is applied. Blohowiak et al. is silent as to the specific epoxy resin used while Poutasse teaches an operable epoxy adhesive that can be applied treated metal foil surfaces.

Response to Arguments

12. Applicant's arguments with respect to claim 72 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CACHET I. SELLMAN whose telephone number is (571)272-0691. The examiner can normally be reached on Monday through Friday, 7:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/C. I. S./

Examiner, Art Unit 1792

/Timothy H Meeks/

Supervisory Patent Examiner, Art Unit 1792